

Engineering Analysis

CDM MAX LLC

North Beach Gas Treating & Processing Facility
13880 Brooklyn Road [Conecuh Co. Rd. No. 42]
Evergreen, AL 36401
Conecuh Co., AL

Facility No. 103-0029

Project Summary:

On 17 July 2009, CDM MAX LLC, hereafter referred to as CDM, submitted an initial Synthetic Minor Operating Permit application for a new 3 MMScf/Day gas processing and treatment facility, to be located at the above address, which is about 4 miles north of Brooklyn, Conecuh Co., AL. This facility is necessary due to the increased gas production in the area. It is primarily intended to treat gas from Sklar Exploration Wells [Facility Nos. 103-0021, 103-0026, and 502-0090].

On 22 July 2009, additional information comprised of emissions calculations, a discussion of the sulfur treatment system to be used, and the rating of the glycol reboiler were submitted to the Department. On 24 July 2009, additional information on the glycol reboiler vent emissions was submitted to the Department. On 27 July 2009, the permit application was deemed to be complete.

Process Description:

Feed to the plant would consist of sour, wet field gas that has been separated from much of the entrained moisture and heavier hydrocarbons at each of the primary production sites in the area. These individual sour, wet gas streams would be gathered and combined at the entrance to the facility, and passed through a low pressure separator to remove free water and liquid hydrocarbons. It is estimated that the inlet gas to the facility would be 1-3.5 ppm H₂S. The remaining sour, wet gas would be pressurized using a compressor driven by a 750 BHP inlet compressor engine.

The wet, sour gas would then be sent to a sweetening unit filled with SulfaTreat[®] pellets. SulfaTreat[®] is the brand name of an absorbent used to remove Total Reduced Sulfur, including H₂S, and Carbon Monoxide, from a sour gas stream. The product of this vessel would be a wet, sweet gas stream; the SulfaTreat[®] pellets would have to be replaced periodically.

A high pressure separator would be used to remove remaining water and liquid hydrocarbons from the sweet, wet gas prior to processing. The water and hydrocarbon liquids would be stored onsite until sale, custody transfer, or disposal.

The sweet, wet gas would then be injected with ethylene glycol before being sent through the refrigeration plant. General cooling for the refrigeration plant would be provided by a 750 BHP refrigeration compressor utilizing propane as the refrigerant. In the refrigeration plant, the gas is cooled such that heavier hydrocarbons, primarily propane and higher, are condensed out in liquid form, called Natural Gas Liquids [NGLs]. The NGLs would be separated from the rich ethylene glycol and water mixture using a high pressure separator. The NGLs are stored onsite in pressurized bullet tanks until sale. The remaining gas would then be sent to the pipeline, or to the fuel gas system.

The rich ethylene glycol and water mixture would contain some Volatile Organic Compounds (VOCs). The rich ethylene glycol and water mixture would be heated in the glycol reboiler where the entrained water and VOCs would be removed as vapors and vented to atmosphere, while the lean glycol stream is recycled back for injection in the gas stream prior to entrance into the refrigeration plant.

Regulations:

There are several possible regulations that could apply to the proposed new gas plant:

1. **ADEM Administrative Code** Rule 335-3-4-.01(1) states that no person shall emit to the atmosphere an opacity of greater than twenty percent (20%) over a six (6) minute period. All emission points would be subject to this regulation.
 - a. Because the fuel for each engine and the glycol reboiler would be primarily natural gas, the no opacity is expected from these units. Therefore, no specific monitoring is required for this regulation for these units.
 - b. The flare would require opacity monitoring, which would consist of daily visual inspections and a visible emissions observation each time opacity is noted. Additionally, in the event that opacity is observed, immediate corrective action should be taken.
2. **40 CFR 60.633(g) [Alternate Flare Opacity]:** In the event that the flare is used to comply with 40 CFR 60 Subpart KKK, the flare is to be operated with no visible emissions, except for a 5-minute period, during any consecutive 2-hour period [§60.18(c)].
3. **ADEM Administrative Code** Rule 335-3-5-.03(1-2) covers sulfur emissions for petroleum production. Hydrogen Sulfide may not be emitted in a greater quantity than 0.10 grain per standard cubic foot (scf) unless it is properly burned to maintain a ground concentration of less than 20 ppb beyond property limits, as averaged over a 30 minute period. Each proposed unit would be subject to this regulation. However, due to the relatively low SO₂ emission values, as shown in Table 13 of the Calculations section, monitoring for H₂S for each unit would consist of monitoring gas H₂S content and fuel usage.

4. **ADEM Administrative Code** Rule 335-3-11-.06(33) refers to NESHAPS Subpart HH. Subpart HH contains both major source and area source requirements for Oil and Gas Production Facilities. This regulation applies to Oil and Gas Production Facilities that either: 1. produce, upgrade, or store liquid hydrocarbons prior to custody transfer or 2. produce, upgrade, or store natural gas prior to custody transfer. The following definitions from §63.761 will be used:
- a. A Major Source is the same as that defined in §63.2 except that HAPs emissions at an oil and gas production or exploration site may not be aggregated for any associated equipment other than glycol dehydrators and storage vessels with the potential for flash emissions.
 - b. A Major Source in §63.2 is defined as a site in which the potential to emit is greater than, or equal to, 10 Ton/yr for a single HAP or greater than, or equal to, 25 Ton/yr for all HAPs.
 - c. Associated equipment means all equipment from the wellhead to the point of custody transfer except glycol dehydrators and storage vessels with the potential for flash emissions.
 - d. An Area Source is defined as any non-Major Source.

Based on the Hazardous Air Pollutant [HAPs] emissions in Table 13, the proposed plant would not be a major source of HAPs. The Area Source requirements of this regulation only apply to Tri-ethylene Glycol Dehydrators. Since this plant would be equipped with an Ethylene Glycol Dehydrator, not a TEG, it would not be subject to the Area Source requirements of this regulation.

5. **ADEM Administrative Code** Rule 335-3-11-.06(103) refers to NESHAPS Subpart ZZZZ for Reciprocating Internal Combustion Engines (RICE). This regulation applies to any internal combustion engine that is located at a site that is a major source or area source of HAPs. The same definitions utilized for Subpart HH apply to this regulation, except that, per the definitions in §63.6675, for the purposes of determining major source status, emissions from RICE may be aggregated along with glycol dehydrators and storage vessels with the potential for flash emissions.

The potential HAPs emissions from the glycol dehydrator is 0.117 Ton/yr of BTEX (Benzene, Toluene, Ethylbenzene, and Xylene).

Because Formaldehyde is the largest possible source of HAPs from the engine and the emission factors for the other HAPs from the AP-42 tables are orders of magnitude less than Formaldehyde, the Formaldehyde emissions will be used to approximate the engine HAPs emissions. The potential Formaldehyde emissions based on the AP-42 Formaldehyde factor for one engine are 0.53 Ton/yr, for a total of 1.06 Ton/yr. Since 1.06 Ton/yr is less than the threshold of 10 Ton/yr of a

single HAPs, and the total HAPs emissions of 1.18 Ton/yr is less than the threshold of 25 Ton/yr, this facility would not be a major source of HAPs, and the major source requirements of Subpart ZZZZ do not apply.

No Air Toxics review is warranted due to the relatively low amount of HAPs emissions.

Per §63.6590(a)(2)(iii) each unit that would begin start-up after 12 June 2006 would be subject to the area source requirements of Subpart ZZZZ. Each of the engines would be subject to this regulation. Per §63.6590(c), each unit subject to Subpart ZZZZ must comply with the requirements of 40 CFR 60, Subpart JJJJ.

6. **New Source Performance Standard (NSPS)** Subpart JJJJ, is the Spark Ignition NSPS as outlined in 40 CFR Part 60. Per §60.4230(a)(4), engines installed and started-up after 12 June 2006, must meet the NSPS requirements. Each engine is planned to be a new unit constructed after January 2009. Therefore, the engines would be subject to this regulation. This regulation has limits for 2 g/hp-hr of NO_x, 4 g/hp-hr of CO, and 1 g/hp-hr of VOC. These limits were converted into lb/hr and used as the basis of the engine calculations in Table 13 below.
7. **ADEM Administrative Code** Rule 335-3-14-.04 refers to the Prevention of Significant Deterioration (PSD) regulation.

Unit	Potential Emissions (Ton/yr)					HAPs (Formaldehyde + BTEX)
	PM	SO ₂	NO _x	CO	VOC	
Flare	0.00E+00	1.27E+00	7.65E+00	4.16E+01	4.86E+01	0.00E+00
Glycol Reboiler	1.85E-02	1.46E-03	2.43E-01	2.04E-01	1.34E-02	0.00E+00
Glycol Reboiler Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.91E-01	1.17E-01
Engines	1.49E+00	3.04E-02	2.90E+01	5.79E+01	1.45E+01	1.06E+00
Total:	1.51E+00	1.30E+00	3.69E+01	9.98E+01	6.39E+01	1.18E+00

Table 13: Total Potential Emissions for CDM Gas Plant

Upon examination of Table 13 above (copied from Part E of the Calculations Section, the total facility emissions should be less than the PSD threshold of 250 Ton/yr. Furthermore, eventually the flare should be used as an emergency device only. Therefore, this project is not subject to a PSD review. Additionally, emissions from this project should not significantly impact any Class I area.

8. **ADEM Administrative Code**, Rule 335-3-10-.02(64), refers to Subpart LLL of the NSPS. Per §60.640(a) through (d), this Subpart applies to sweetening units located at onshore gas treatment facilities constructed, reconstructed, or modified after 20 January 1984. Per §60.641, a sweetening unit is defined as a process unit that separates H₂S and CO₂ contents from the sour natural gas stream. However, per §60.640(e), this regulation does not apply to sweetening units producing acid gas

that is not released to atmosphere. Since the sweetening unit at this facility is designed with an absorbent for the acid gas, and no acid gas is released to atmosphere, this regulation does not apply.

9. **ADEM Administrative Code**, Rule 335-3-10-.02(63) refers to Subpart KKK of the NSPS. This Subpart has requirements for all equipment at an onshore natural gas processing plants in wet gas service, located at natural gas processing facilities constructed, reconstructed, or modified after 20 January 1984.

Per §60.633(d), non-fractionating gas plants with a design capacity of 10 MMScf/Day are exempt from the periodic monitoring requirements for pumps in light liquid service, valves in gas/vapor and light liquid service, and pressure relief devices in gas/vapor service. A non-fractionating plant is defined as a gas plant that does not separate NGLs into natural gas products. The North Beach Gas Facility meets the definition of a non-fractionating plant, and is designed to process 3 MMScf/Day.

Additionally, per §60.633(f), reciprocating compressors in wet gas service are exempt from compressor control requirements. Thus, the inlet compressors are exempt from the control requirements of this regulation.

Therefore, the refrigeration compressors are subject to the control and monitoring requirements laid out in §60.482-3. Any other equipment in VOC service not excluded by §60.633(d) and (f) is also subject to the requirements of this regulation.

10. **ADEM Administrative Code** Rule 335-3-10-.02(9)(b), which refers to Subpart K_b of NSPS. Per §60.110b(a), this regulation applies to each VOC tank constructed after 12 July 1984, and with a design capacity greater than, or equal to, 75 m³ [about 19,813 gallons or 472 BBL]. However, since each tank to be constructed at this site is to be a 16,800 gallon [400 BBL] tank, each of these tanks is exempt from this regulation.
11. **Title V Requirements:** CDM has applied for a Synthetic Minor Operating Permit. From Table 13 above, the facility emissions should be less than 100 Ton/yr for all criteria pollutants, although the CO emissions are projected at 99.8 Ton/yr. Since 99.8 Ton/yr is exceedingly close to the Title V threshold of 100 Ton/yr, CDM would be subject to a strict monitoring plan, as follows:

CO Monitoring Plan:

As can be seen in Table 13, CO emissions are primarily from the engines and the flare.

Each engine would be subject to a limit of 4 g/hp-hr [~6.62 lb/hr] from NSPS JJJJ. Compliance with this limit would be two-fold. First, each engine would be required to undergo annual emissions testing using

EPA reference method 10, or approved variations. Monthly emissions calculations would be made using measured emission factors. Second, CDM would be restricted to operating only two of the four engines at a given time.

The flare emissions are dependent on variable gas flow rate and heat content. The results in Table 13 are for the case when all of the inlet gas is flared at a flow rate of 411,000 Scf/Day and a heat content of 1500 BTU/Scf. It should be noted that this is probably an over-estimation since this case would occur only if the plant is offline. Using this as a limiting case, the 99.8 Ton/yr equate to 9.50 lb/hr. The flare will be required to meet this limit of 9.50 lb/hr, averaged out over a 365-day period. Additionally, heat content shall be measured. It should be noted that the bulk of the flaring should occur during the first few months of operation until the plant is connected to the gas pipeline. Records of the flare feed rate, flare operating hours, and gas heat content shall be kept and used in monthly calculations to obtain an average hourly emission rate.

VOC Monitoring Plan:

As can be seen in Table 13, VOC emissions are primarily from the engines and the flare.

Each engine would be subject to a limit of 1 g/hp-hr [~ 1.65 lb/hr] from NSPS JJJJ. Compliance with this limit would be two-fold. First, each engine would be required to undergo annual emissions testing using EPA reference method 18, method 25, or approved variations of these methods. Monthly emissions calculations would be made using measured emission factors. Second, CDM would be restricted to operating only two of the four engines at a given time.

The flare would be subject to an hourly limit of 11.1 lb/hr, also averaged out over a 365-day period. This limit was derived using the same methodology discussed above for CO. Records of the flare feed rate, flare operating hours, and gas heat content shall be kept and used in monthly calculations to obtain an average hourly emission rate.

A GRI-GlyCALC simulation shall be run quarterly to estimate the VOC emissions from the glycol reboiler vent. This simulation would also be used to obtain an estimate of the HAPs emissions. The glycol reboiler vent emissions in Table 13 appear to be very low, but it is possible that these emissions could be higher than predicted. As an alternative, CDM may elect to substitute a worst-case scenario for each quarter.

Equipment subject to NSPS KKK would be subject to the control equipment, monitoring, recordkeeping, and reporting specified in that regulation.

NO_x Monitoring Plan:

As can be seen in Table 13, NO_x emissions are primarily from the engines.

Each engine would be subject to a limit of 2 g/hp-hr [\sim 3.31 lb/hr] from NSPS JJJJ. Compliance with this limit would be two-fold. First, each engine would be required to undergo annual emissions testing using EPA reference method 7E, or approved variations of this method. Monthly emissions calculations would be made using measured emission factors. Second, CDM would be restricted to operating only two of the four engines at a given time.

For the flare, records of the flare feed rate, flare operating hours, and gas heat content shall be kept and used in monthly calculations to obtain an average hourly emission rate.

SO₂ Monitoring Plan:

As can be seen in Table 13, SO₂ emissions are primarily from the flare.

Any gas that can be flared shall be measured for its sulfur content. Records of the flare feed rate, flare operating hours, and sulfur content [measured as H₂S] shall be kept.

PM Monitoring Plan:

No monitoring is required for Particulates due to the relatively low potential emissions.

Required Reports:

CDM will be required to submit quarterly reports. These reports are to summarize the emissions from each unit in both lb/hr and Ton/yr, along with any deviations from permit requirements.

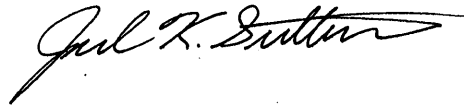
Proposed Permits:

The above monitoring plan will be divided amongst three synthetic minor operating permits (X001, X002, and X003). Below is a brief discussion of each permit:

1. SMOP X001: This permit will cover the flare requirements.
2. SMOP X002: This permit will cover the engine requirements.
3. SMOP X003: This permit will cover all equipment in VOC service, including the glycol reboiler vent.

Recommendations:

This analysis indicates that these sources would meet the requirements of all federal and state rules and regulations. Therefore, I recommend that CDM MAX, LLC, be issued Synthetic Minor Operating Permit Nos. 103-0029-X001, X002, and X003 for these units upon receipt of permitting fees. Draft copies of the permit may be found in Attachment B.



Joel K. Sutton
Industrial Minerals Section
Energy Branch
Air Division

14 August 2009
Date

Attachment A:

Calculations

Part A-Glycol Reboiler Calculations:

Table 1 shows the AP-42 factors for potential emissions from a natural gas-fired combustion source. In this case, these values apply to the glycol reboiler.

Pollutant	SO ₂	NO _x	CO	PM	VOC
AP-42 Factor (lb/MMscf)	0.6	100	84	7.6	5.5

Table 1: AP-42 Emission Factors in lb/MMscf

These factors were used by CDM in their potential emissions computations. Equation I was used to generate the results in Table 2:

$$\text{Amount Pollutant} = \frac{(\text{AP - 42 Factor (in lb/MMscf)}) * (\text{Rated Heat Capacity (in MMBTU/hr)})}{(\text{Heat Content (in MMBTU/MMscf)})} \quad [\text{Equation I}]$$

Here, the amount of pollutant is in lb/hr. The AP-42 Factors are listed in Table 1 and the Rated Heat Capacity for the reboiler is listed in the table under Heater Rating. The reboiler burn sweetened gas produced at the plant, and with a Heat Content of 1080 BTU/Scf.

Unit	Heater Rating (MMBTU/hr)	Pollutant (lb/hr)				
		PM	SO ₂	NO _x	CO	VOC
Glycol Reboiler	0.6	4.22E-03	3.33E-04	5.56E-02	4.67E-02	3.06E-03
Total Pollutants (lb/hr):		4.22E-03	3.33E-04	5.56E-02	4.67E-02	3.06E-03

Table 2: Potential Emissions of Criteria Pollutants for the Reboiler in lb/hr

Multiplying the results in Table 2 by 8760 hr/yr and dividing by 2000 lb/Ton yields Table 3.

Unit	Heater Rating (MMBTU/hr)	Pollutant (Ton/yr)				
		PM	SO ₂	NO _x	CO	VOC
Glycol Reboiler	0.6	1.85E-02	1.46E-03	2.43E-01	2.04E-01	1.34E-02
Total Pollutants (Ton/yr):		1.85E-02	1.46E-03	2.43E-01	2.04E-01	1.34E-02

Table 3: Potential Emissions of Criteria Pollutants for the Reboiler in Ton/yr

Part B-Flare Calculations:

These calculations will be based on a gas flowrate of 411,000 scf/day or 17,125 scf/hr. These calculations are based on the assumption that all of the gas entering the plant gas will be flared. Assuming that all of the gas is sent to the flare, then 17,125 scf/hr of gas would be burned in the flare. There are 1000 scf/Mscf, which converts to a flowrate of 17.125 Mscf/hr.

For a Flare, the amount of CO and NO_x produced is shown in Equation II:

$$\text{Amount Pollutant} = \frac{(\text{AP - 42 Factor (in lb/MMBTU)}) * (\text{Rated Heat Capacity (in BTU/hr)})}{(1000000 \text{ BTU/MMBTU})}$$

[Equation II]

The AP-42 Factors for flares from Table 13.5-1 of the Industrial Flares Section are 0.37 lb/MMBTU for CO and 0.068 lb/MMBTU for NO_x. The Rated Heat Capacity for the Flare may be computed by multiplying the flowrate (in scf/hr), which is 17,125 scf/hr, by the gas Heat Content as shown in Equation III:

$$\text{Rated Heat Capacity (in BTU/hr)} = (\text{Heat Content (in BTU/scf)}) * (\text{Flowrate (in scf/hr)})$$

[Equation III]

Table 6 shows the results for CO and NO_x if the entire gas stream is burned in the flare. Results are shown in both lb/hr and ton/52 week year. The Heat Content listed for the flare is the average inlet Heat Content.

Unit	Heat Content (BTU/scf)	Pollutant (lb/hr)		Pollutant (Ton/yr)	
		CO	NO _x	CO	NO _x
Flare	1500	9.50E+00	1.75E+00	4.16E+01	7.65E+00
Total Pollutants:		9.50E+00	1.75E+00	4.16E+01	7.65E+00

Table 4: Potential Emissions for CO and NO_x

Equation IV may be used to compute the amount of SO₂ released through the flare.

$$\text{Amount SO}_2 = (1.689 \text{ lb/Mscf}) * (\text{Mole \% H}_2\text{S}) * (\text{Flowrate (in Mscf/hr)})$$

[Equation IV]

As mentioned earlier, the flowrate to the flare would be 17.125 Mscf/hr. The mole percent for the flare is the average inlet content, and is equal to approximately 100 ppm [0.01 mole %]. The Heat Content is the value given earlier. Table 5 shows the amount of potential SO₂ emissions.

Unit	Mcf/hr	H ₂ S mole %	SO ₂ (lb/hr)	SO ₂ (Ton/yr)
Flare	17.1250	0.0100	2.89E-01	1.27E+00
Total Pollutant:			2.89E-01	1.27E+00

Table 5: Potential SO₂ Emissions

Now, in order to estimate the potential VOC emissions, the following assumptions were made:

- the gas molecular weight = 28 lb/lbmol
- the VOC mass fraction = 0.44
- the flare is 98% efficient
- the flowrate to the flare = 17,125 scf/hr

The potential VOC emissions are:

$$\text{VOC Emissions} = \left(\frac{17125 \text{ scf/hr} * 28 \text{ lb/lbmol}}{380 \text{ scf/lbmol}} \right) * 0.48 * (1 - 0.98)$$

$$\text{VOC Emissions} = 11.1 \text{ lb/hr}$$

$$\text{VOC Emissions} = 48.6 \text{ Ton/yr}$$

Table 6 is a composite of Tables 4 and 5 and the calculation shown above for VOC. It shows the total potential emissions for the criteria pollutants in Ton/year for the flare.

Unit	Pollutant (Ton/yr)			
	SO ₂	NO _x	CO	VOC
Flare	1.27E+00	7.65E+00	4.16E+01	4.86E+01
Total:	1.27E+00	7.65E+00	4.16E+01	4.86E+01

Table 6: Potential Emissions for Criteria Pollutants for the Flare

The results of Table 6 will be added to the results of Table 3 as well as the results of the following calculations in order to obtain an overall value.

Part C-Engine Calculations:

There are to be two types of engines at the plant site: inlet compressor engines and refrigeration compressor engines. Table 7 summarizes the onsite engines. All engines are four stroke lean burn (4SLB) engines. Equation V was used to convert horsepower to MMBTU/hr as shown in Table 7. The Conversion Factors are based on manufacturer data.

$$\text{Engine Rating (in MMBTU/hr)} = \frac{\text{Engine Rating (in BHP)}}{1000000 \text{ BTU/MMBTU}} * \text{Conversion Factor (in BTU/BHP - hr)}$$

[Equation V]

Engine Rating (BHP)	Conversion Factor (BTU/BHP-hr)	Engine Rating (MMBTU/hr)	Catalytic Converter
750	7866	5.90E+00	No

Table 7: Engine Summary

For the purposes of these calculations, AP-42 values will be used for Formaldehyde, Particulates (PM), and an SO₂ estimate. These values come from Table 3.2-3 for the 4SRB, as reported in the Natural Gas Fired Engines Section and are in units of lb/MMBTU. The prescribed emission limits from 40 CFR 60 Subpart JJJJ will be used for NO_x, CO, and VOCs. These values are listed in units of g/hp-hr in the regulation, but have been converted to lb/hp-hr here. Table 8 shows emission factors used in these calculations.

NSPS JJJJ Factor by Pollutant (lb/BHP-hr)			AP-42 Factor by Pollutant (lb/MMBTU)		
NO _x	CO	VOC	PM	SO ₂	Formaldehyde
0.00441	0.00882	0.002205	0.02891	0.000588	0.0205

Table 8: AP-42 Factors for the Engines

The Rated Heat Capacity (Engine Rating in MMBTU/hr), as shown in Table 7, along with the AP-42 Factors, as shown in Table 8, will be used with Equation I from Part A to compute the values in Table 9 for Particulates, Formaldehyde, and an SO₂ estimate. The NSPS JJJJ limit values will be used to compute the other potential emissions as shown in Table 9. In order to obtain these emissions, the engine rating in BHP will be multiplied by the emission factor in lb/BHP-hr.

Engine Rating (BHP)	Potential Emissions (lb/hr)					
	PM	SO ₂	NO _x	CO	VOC	Formaldehyde
750	1.71E-01	3.47E-03	3.31E+00	6.62E+00	1.65E+00	1.21E-01
Total:	3.41E-01	6.94E-03	6.62E+00	1.32E+01	3.31E+00	2.42E-01

Table 9: Potential Emissions for Criteria Pollutants for the Engines in lb/hr

Multiplying the results in Table 9 by 8760 hr/yr and dividing by 2000 lb/Ton yields the results in Table 10:

Engine Rating (BHP)	Potential Emissions (Ton/yr)					
	PM	SO ₂	NO _x	CO	VOC	Formaldehyde
750	7.47E-01	1.52E-02	1.45E+01	2.90E+01	7.24E+00	5.30E-01
Total:	1.49E+00	3.04E-02	2.90E+01	5.79E+01	1.45E+01	1.06E+00

Table 10: Potential Emissions for Criteria Pollutants in Ton/yr

These results will be added to those for the reboiler, the flare, and the following calculations in order to obtain an overall value for the potential emissions for this facility.

Part D: Glycol Dehydrator Calculations

Table 11 summarizes the values from the glycol dehydrator simulation for the proposed plant. These emissions include VOCs, as well as Benzene, Toluene, and Xylene [BTEX].

Pollutant	lb/hr	Ton/yr
VOC	0.18	0.79
BTEX	0.03	0.12

Table 11: Glycol Dehydrator Emissions

The emissions in Ton/yr will be added to all preceding emissions in order to obtain an overall value for the facility.

Part E-Total Emissions:

Table 12 summarizes the facility-wide emissions on a unit basis in lb/hr:

Unit	Potential Emissions (lb/hr)					
	PM	SO ₂	NO _x	CO	VOC	HAPs (Formaldehyde + BTEX)
Flare	0.00E+00	2.89E-01	1.75E+00	9.50E+00	1.11E+01	0.00E+00
Glycol Reboiler	4.22E-03	4.69E-03	3.33E-04	4.67E-02	0.00E+00	0.00E+00
Glycol Reboiler Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-01	2.67E-02
Engines	3.41E-01	6.94E-03	6.62E+00	1.32E+01	3.31E+00	2.42E-01
Total:	3.45E-01	3.01E-01	8.36E+00	2.28E+01	1.46E+01	2.69E-01

Table 12: Facility-wide Potential Emissions in lb/hr

Table 13 summarizes the facility-wide emissions on a unit basis in Ton/yr:

Unit	Potential Emissions (Ton/yr)					
	PM	SO ₂	NO _x	CO	VOC	HAPs (Formaldehyde + BTEX)
Flare	0.00E+00	1.27E+00	7.65E+00	4.16E+01	4.86E+01	0.00E+00
Glycol Reboiler	1.85E-02	1.46E-03	2.43E-01	2.04E-01	1.34E-02	0.00E+00
Glycol Reboiler Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.91E-01	1.17E-01
Engines	1.49E+00	3.04E-02	2.90E+01	5.79E+01	1.45E+01	1.06E+00
Total:	1.51E+00	1.30E+00	3.69E+01	9.98E+01	6.39E+01	1.18E+00

Table 13: Facility-wide Potential Emissions in Ton/yr

This result is referenced in Point No. 6 of the Regulations Section.

Attachment B:

Draft Provisos

SYNTHETIC MINOR OPERATING PERMIT

PERMITEE: CDM MAX, LLC

LOCATION: 13880 Brooklyn Road [County Rd. 42], Evergreen, Conecuh Co., AL

PERMIT NUMBER

**DESCRIPTION OF EQUIPMENT,
ARTICLE OR DEVICE**

103-0029-X001

North Beach Gas Treating & Processing Facility

Closed Vent System & Flare

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Ala. Code §§22-28-1 to 22-28-23 (2006 Rplc. Vol. and 2007 Cum. Supp.) (the "AAPCA") and the Alabama Environmental Management Act, as amended, Ala. Code §§22-22A-1 to 22-22A-15 (2006 Rplc. Vol. and 2007 Cum. Supp.), and rules and regulations adopted there under, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

ISSUANCE DATE : **DRAFT**

Alabama Department of Environmental Management

DRAFT

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Flare

Permit No. : 103-0029-X001

1. This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.
2. This permit expires and the application is cancelled if construction has not begun within 24 months of the date of issuance of the permit.
3. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.
4. The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.
5. The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.
6. Additions and revisions to the conditions of this Permit will be made, if necessary, to ensure that the Department's air pollution control rules and regulations are not violated.
7. Nothing in this permit or conditions thereto shall negate any authority granted to the Department pursuant to the Alabama Environmental Management Act or regulations issued thereunder.
8. A new permit application must be made for new sources, replacements, alterations or design changes which may result in the issuance of, or an increase in the issuance of, air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants.
9. On completion of construction of the device for which this permit is issued, notification of the fact is to be given to the Chief of the Air Division. Authorization to operate the unit must be received from the Chief of the Air Division. Failure to notify the Chief of the Air Division of construction and/or operation without authorization could result in revocation of this permit.
10. This process including all air pollution control devices and capture systems for which this permit is issued shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.
11. In case of shutdown of air pollution control equipment for scheduled maintenance for a period greater than **2 hours**, the intent to shut down shall be reported to the Air Division at least 24 hours prior to the planned shutdown, **unless accompanied by the immediate shutdown of the emission source.**

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12. In the event there is a breakdown of equipment in such a manner as to cause increased emission of air contaminants for a period greater than 24 hours, the person responsible for such equipment shall notify the Department within an additional 24 hours and provide a statement giving all pertinent facts, including the duration of the breakdown. The Department shall be notified when the breakdown has been corrected.
13. All deviations from requirements within this permit shall be reported to the Department within 48 hours of the deviation or by the next work day while providing a statement with regards to the date, time, duration, cause and corrective actions taken to bring the sources back into compliance. A review and evaluation of this report shall be utilized in Departmental determination of whether or not a violation of a permit requirement or requirements occurred.
14. This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.
15. Records will be maintained of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the process equipment and any malfunction of the air pollution control equipment. These records will be kept in a permanent form suitable for inspection and will be retained for at least two years following the date of each occurrence.
16. Submittal of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require stack emission testing at any time.
17. At no time shall the total emissions from the sources at this facility exceed 100 Ton/yr of NO_x, CO, VOC, or SO₂. Compliance with this provision will be demonstrated by maintaining emission calculations as detailed in all current permits.
18. As demonstrated by the calculations in proviso 23 of this permit, the flare shall not emit greater than:
 - (a) 9.50 lb/hr of Carbon Monoxide [CO] averaged over a 12-Month Period.
 - (b) 11.1 lb/hr of Volatile Organic Compounds [VOC] averaged over a 12-Month Period.
19. Each process gas stream containing more than 0.10 of a grain of hydrogen sulfide per Scf shall not be emitted into the atmosphere unless it is properly burned to maintain the ground level concentrations of hydrogen sulfide to less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.

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- (a) Venting of sour gas to the atmosphere with an H₂S content greater than 160 ppmv triggers an immediate inspection, corrective action, and reporting to the Department within 48 hours or two work days, except as provided for in proviso 19(b).
 - (b) If vessels or equipment are being de-pressured and/or emptied and the reduced pressure will not allow flow of the process gas stream to the combustion device, then venting to the atmosphere of any gas stream shall be allowed, for a duration not exceed 15 continuous minutes.
20. The flare shall comply with the requirements specified in proviso 20(a) through (c) of this permit.
- (a) One of the following opacity standards shall apply:
 - (1) If the flare is not being used to comply with a federal regulation:
 - (i) Except for one 6-minute period during any 60-consecutive minute period, each source shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.
 - (ii) At no time shall each source discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.
 - (2) If the flare is being used to comply with a federal regulation, then it shall be operated with no visible emissions, except for a 5-minute period, during any consecutive 2-hour period.
 - (b) Provided the emission source is being utilized and facility operating personnel notice visible emissions are being emitted from the source, a visible emission observation that meets the requirements specified in 20(b)(1) through (3) of this permit.
 - (1) Duration of each visible emission observation shall be a minimum of 15 minutes and no longer than 60 minutes.
 - (i) For proviso 20(a)(1)(i), a visible emission event shall be defined as anytime the observed 6-minute average opacity exceed 20% for the 2nd time when utilizing Test Method 9.
 - (ii) For proviso 20(a)(1)(ii), a visible emission event shall be defined as anytime the observed 6-minute average opacity exceed 40% for the 1st time when utilizing Test Method 9.

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- (iii) For proviso 20(a)(2), a visible emission event shall be defined a anytime there are more than 5 minutes of visible emissions during a consecutive 2-hour period.
 - (2) Provided a visible emission event has occurred, the visible emission observation shall continue at a frequency suitable to defining the duration of the visible emission event. One 15 minute observation shall be undertaken to establish the end of the visible emission event.
 - (3) The occurrence of a visible emission event triggers an immediate inspection, corrective action, and reporting to the Department within 48 hours or two work days.
 - (c) A copy of each visible emissions observation required by proviso 20(b) shall be maintained onsite in a form suitable for inspection for at least two years.
 - (d) The emission of only steam or condensed water vapor shall not trigger a visible emissions observation required by proviso 20(b).
21. The flow rate of any gas stream sent to the flare shall be measured with one of the following methods:
- (a) When possible and practicable, a continuous monitoring system meeting the following requirements shall be utilized:
 - (1) In the event that multiple streams share a point of commonality,
 - (i) A single meter at this common point shall be utilized as representative of all streams
 - OR
 - (ii) A single meter shall be utilized for each stream
 - (2) Calibration, maintenance and operation of metering system shall be performed in accordance to manufacturer's specification.
 - (b) In the event that a continuous meter is not practicable, the flow rates shall be accounted for by utilizing special estimating methods (i.e. engineer estimates, material balance, computer simulation, special testing etc.).
 - (c) Other flow measurement methods as approved by the Department may be utilized.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Flare

Permit No. : 103-0029-X001

22. The following data shall be measured, recorded, and kept on file in a form suitable for inspection for a period of two (2) years:
- (a) The hydrogen sulfide content of each process stream that can be sent to the flare shall be determined in accordance to the requirements specified in proviso 22(a)(1) and (2) of this permit.
 - (1) Testing shall consist of capturing one representative sample of the stream at a frequency of no less than once each Quarter.
 - (2) The sample collected shall be analyzed while utilizing the Tutwiler procedures in 40 CFR §60.648 or the chromatographic analysis procedures in ASTM E-260 or the stain tube procedures in GPA 2377-86 or those provided by the stain tube manufacture.
[SG Stream (H₂S Mole %)]
 - (b) The volatile organic compound, Btu content and molecular weight of each process stream that can be sent to the flare shall be determined in accordance to the requirements specified in proviso 22(b)(1) and (2) of this permit.
 - (1) Testing shall consist of capturing one representative sample of the stream at a frequency of no less than once each Quarter.
 - (2) The sample collected shall be analyzed while utilizing the chromatographic analysis procedures in 40 CFR Part 60 Appendix A, Method 18, Method 25A, or equivalent methods and procedures.
[SG Stream (VOC Mole %)]
[SG Stream (Mole Wt)]
[SG Stream (BTU/Scf)]
 - (c) Provided multiple process streams can be sent to the flare and it is possible to capture a common stream whose contents would be representative of all the streams, that common stream may be used instead of the individual process streams.
 - (d) The frequency of this testing, the components tested for and methods and procedures that are used may be modified upon receipt of Department approval.
23. A monthly record for the flare of the information specified in paragraphs 23(a) through (d) of this permit shall be maintained for a period of two (2) years, and made available for inspection.
- (a) The date, starting time, and duration of each deviation, along with the cause and corrective actions taken.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Flare

Permit No. : 103-0029-X001

(b) The following records on the flare operating hours:

(1) Number of hours that the flare was operated during the month =
[Flare (Hours/Month)]

(2) Total Flare Hours [Hours/ 12-Months] =
 Σ [Flare (Hours/Month)]

(c) The following records for gas burned in the flare:

(1) Volume of gas burned in flare =
[Stream Volume Burned (Scf/Month)]

(2) Stream (MMBtu/Month) =
[Stream Volume Burned (Scf/Month)] X
[SG Stream (Btu/Scf)]

(3) Flare (MMBtu/Month) =
 Σ of Stream (MMBtu/Month)

(d) A record of the following emissions calculations for CO, NO_x, and VOC [Pollutant]:

(1) For each stream that may be sent to the flare:

(i) Stream CO (Lbs/Month) =
[Stream (MMBtu/Month)] X [(0.37 Lbs. CO /MMBtu)]

(ii) Stream NO_x (Lbs/Month) =
[Stream (MMBtu/Month)] X [(0.068 Lbs. NO_x /MMBtu)]

(iii) Stream VOC (Lbs/Month) =
 $\frac{[\text{Stream Volume Burned (Scf/Month)}] \times [\text{SG Stream (VOC Mole \%)}] \times [\text{SG Stream (Mole Wt)}] \times [0.02]}{[385 (\text{Scf/Mole}) \times 100\%]}$

(2) For the total flow to the flare:

(i) Flare Pollutant (Lbs/Month) =
 Σ of Stream Pollutant (Lbs/Month)

(ii) Flare Pollutant (Tons/Month) =
 $\frac{\text{Flare Pollutant (Lbs/Month)}}{[2000 \text{ Lbs/Ton }]}$

(iii) Total Flare Pollutant (Tons/ 12-Months) =
 Σ of Flare Pollutant (Tons/Month)

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Flare

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$$(iv) \quad \text{Total Flare Pollutant (Lbs/Hour)} = \frac{\text{Total Flare Pollutant (Lbs/Month)}}{\text{Total Flare Hours (Hours/12-Months)}}$$

- (e) The frequency, methodology, and content of the required records may be altered upon receipt of Department approval.

24. CDM MAX, LLC, shall submit quarterly monitoring reports on a calendar basis.

- (a) These reports shall be submitted within 30 days following the end of the calendar quarter.
- (b) These reports shall summarize the information in proviso 23 of this permit.
- (c) Reported emissions shall cover a 12-month period.
- (d) The frequency and/or content of the report may be altered upon receipt of Departmental approval.

DRAFT

Date

SYNTHETIC MINOR OPERATING PERMIT

PERMITEE: CDM MAX, LLC

LOCATION: 13880 Brooklyn Road [County Rd. 42], Evergreen, Conecuh Co., AL

PERMIT NUMBER

103-0029-X002

**DESCRIPTION OF EQUIPMENT,
ARTICLE OR DEVICE**

North Beach Gas Treating & Processing Facility

Emission Point:

IC01, IC02,
RC01, & RC02

Four (4) – 750 BHP, 4 cycle, lean burn, gas fired, RIC engines

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Ala. Code §§22-28-1 to 22-28-23 (2006 Rplc. Vol.) (the "AAPCA") and the Alabama Environmental Management Act, as amended, Ala. Code §§22-22A-1 to 22-22A-15 (2006 Rplc. Vol.), and rules and regulations adopted there under, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

ISSUANCE DATE : **DRAFT**

Alabama Department of Environmental Management

DRAFT

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

1. This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.
2. This permit expires and the application is cancelled if construction has not begun within 24 months of the date of issuance of the permit.
3. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.
4. The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.
5. The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.
6. Additions and revisions to the conditions of this Permit will be made, if necessary, to ensure that the Department's air pollution control rules and regulations are not violated.
7. Nothing in this permit or conditions thereto shall negate any authority granted to the Department pursuant to the Alabama Environmental Management Act or regulations issued thereunder.
8. A new permit application must be made for new sources, replacements, alterations or design changes which may result in the issuance of, or an increase in the issuance of, air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants.
9. On completion of construction of the device for which this permit is issued, notification of the fact is to be given to the Chief of the Air Division. Authorization to operate the unit must be received from the Chief of the Air Division. Failure to notify the Chief of the Air Division of construction and/or operation without authorization could result in revocation of this permit.
10. This process including all air pollution control devices and capture systems for which this permit is issued shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

11. In case of shutdown of air pollution control equipment for scheduled maintenance for a period greater than **24 hours**, the intent to shut down shall be reported to the Air Division at least 24 hours prior to the planned shutdown, **unless accompanied by the immediate shutdown of the emission source.**
12. In the event there is a breakdown of equipment in such a manner as to cause increased emission of air contaminants for a period greater than 24 hours, the person responsible for such equipment shall notify the Department within an additional 24 hours and provide a statement giving all pertinent facts, including the duration of the breakdown. The Department shall be notified when the breakdown has been corrected.
13. All deviations from requirements within this permit shall be reported to the Department within 48 hours of the deviation or by the next work day while providing a statement with regards to the date, time, duration, cause and corrective actions taken to bring the sources back into compliance. A review and evaluation of this report shall be utilized in Departmental determination of whether or not a violation of a permit requirement or requirements occurred.
14. This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.
15. Records will be maintained of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the process equipment and any malfunction of the air pollution control equipment. These records will be kept in a permanent form suitable for inspection and will be retained for at least two years following the date of each occurrence.
16. Submittal of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require stack emission testing at any time.
17. At no time shall the total emissions from the sources at this facility exceed 100 Ton/yr of NO_x, CO, VOC, or SO₂. Compliance with this provision will be demonstrated by maintaining emission calculations as detailed in all current permits.
18. At no time shall more than two (2) of the 750 BHP, 4-cycle, Lean Burn, engines operate at any given time.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

19. Unit Nos. IC01, IC02, RC01, and RC02 are affected sources subject to the area source requirements of 40 CFR 63 Subpart ZZZZ, as demonstrated by compliance with 40 CFR 60 Subpart JJJJ [§60.4230(a)(4)(ii), §63.6590(a)(2)(iii) & §63.6590(c)]:
- (a) Each of the 750 BHP, 4-cycle Lean Burn engines shall meet the following required emission limits derived from Table 1 of 40 CFR 60 Subpart JJJJ [§60.4233(e)]:
 - (1) Carbon monoxide (CO) emissions shall not exceed 6.62 Lbs/Hour.
 - (2) Nitrogen oxide (NO_x) emissions shall not exceed 3.31 Lbs/Hour.
 - (3) Volatile organic compound (VOC) emissions shall not exceed 1.65 Lbs/Hour.
 - (b) Compliance with the emission limits in proviso 19(a) shall be demonstrated through emissions testing as outlined in proviso 20 of this permit [§60.4243].
 - (c) Records of all information outlined in proviso 25.
 - (d) Before commencing operation of each engine, CDM Max, LLC shall submit a request for Temporary Authorization to Operate, including an updated Form 107 with the following information [§60.4245(c)(1)-(5)]:
 - (1) Owner/Operator Name and Address
 - (2) Unit make, model, engine family, serial number, rating, and maximum displacement
 - (3) Unit Date of Manufacture OR Model year
 - (4) Fuel to be used
 - (5) Whether or not emission control equipment is to be used
 - (6) Unit Date of Construction, which is the date the unit was ordered per 40 CFR 60.4230(a).
20. Each engine shall be tested in accordance to the requirements specified in proviso 20(a) through (f) of this permit.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

- (a) Each of these units shall be tested within one year after the commencement of operation that unit, and every 8760 hours, or three years, whichever comes first [§60.4243(a)(2)(iii)].
- (b) Each unit shall be tested within 10% of the maximum load during periods of normal operation [§60.4244(a) & (b)].
- (c) Each test shall consist of three runs of at least one (1) hour in duration [§60.4244(c)].
- (d) Each run shall test for CO, NO_x, and VOC using the methods laid out in Table 2 of 40 CFR 60 Subpart JJJJ [§60.4244(d), (e), and (f) or (g)]:
 - (1) Method and procedures specified in 40 CFR Part 60 Appendix A, Test Methods 1, 2, 3, 4, 7, 10, and 18 or 25, including all EPA approved variations of these Test Methods.
 - Or
 - (2) Other methods as allowed under 40 CFR 60 Subpart JJJJ.
- (e) For the purpose of indicating compliance requirements specified in proviso 19(a) of this permit, each air pollutant emissions shall be determined in pounds per hour.
- (f) For the purpose of making the calculations specified in proviso 25 of this permit, emission factors for each air pollutant shall be determined in pounds per MMBtu.

[Test (Lbs/MMBtu)]

21. The Department must be notified in writing at least 10 working days in advance of all emission tests to be conducted and submitted as proof of compliance with the Department's air pollution control rules and regulations.

To avoid problems concerning testing methods and procedures, the following shall be included with the notification letter:

- (a) The date the test crew is expected to arrive, the date and time anticipated of the start of the first run, how many and which sources are to be tested, and the names of the persons and/or testing company that will conduct the tests.
- (b) A complete description of each sampling train to be used, including type of media used in determining gas stream components, type of probe lining, type of filter media, and probe cleaning method and solvent to be used (if test procedure requires probe cleaning).

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

- (c) A description of the process to be tested, including the feed rate, any operating parameter used to control or influence the operations, and the rated capacity.
 - (d) A sketch or sketches showing sampling point locations and their relative positions to the nearest upstream and downstream gas flow disturbances.
 - (e) A pretest meeting may be held at the request of the source owner or the Department. The necessity for such a meeting and the required attendees will be determined on a case-by-case basis.
 - (f) All test reports must be submitted to the Department within 60 days of the actual completion of the test [§60.4245(d)].
22. Any performance tests required shall be conducted and data reduced in accordance with the test methods and procedures contained in each specific permit condition unless the Director (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, or (3) approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance.
23. These engines shall burn only sweetened natural gas as fuel. Compliance shall be demonstrated by:
- (a) Performing semi-annual analyses on the fuel gas for sulfur and heat content utilizing methods and procedures detailed in provisos 22(a)(2) and (b)(2) of Synthetic Minor Operating Permit No. 103-0029-X001.
 - (b) Maintaining a copy of the fuel gas supplier's certification onsite.
 - (c) Other methods and procedures as approved in writing by the Department.
24. When possible and practicable, a continuous metering system shall be utilized that is capable of continuously monitoring and recording the fuel gas flow rate to each engine.
- (a) The continuous measurement may be made with a single meter through which all of the fuel gas for identical make and model engines flow.
 - (1) Calibration, maintenance and operation of metering system shall be performed in accordance to manufacturer's specification.

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

- (b) Volumetric flow of fuel gas streams that are not continuously measured shall be accounted for by utilizing special estimating methods (i.e. engineer estimates, material balance, computer simulation, special testing etc.).

25. A monthly record of the information specified in proviso 25(a) through (f) of this section shall be maintained for Unit Nos. IC01, IC02, RC01, and RC02 [Engine] for a period of two (2) years, and made available for inspection:

(a) Fuel gas Btu content [Fuel Gas (Btu/Scf)]

(b) Fuel gas consumption of Engine [Engine Fuel Gas (MScf/Month)]

(c) MMBtu of fuel gas consumption of Engine
Engine Fuel Gas (MMBtu/Month) =
$$\frac{[\text{Engine Fuel Gas (MScf/Month)}] \times [\text{Fuel Gas (Btu/Scf)}]}{1000}$$

(d) Engine operating hours [Engine operating Hours/Month]

(e) For the purpose of indicating periodic compliance with provisos 18(a) of this permit, CO, NO_x, and VOC emissions shall be determined in accordance to the procedures specified in proviso 25(e)(1) through (4) of this permit [§60.4245(a)(4)].

(1) Engine (Lbs/Month) =
[Engine Fuel (MMBtu/Month)] X [Test (Lbs/MMBtu)]

(i) Pollutant emission factors for VOC, NO_x, and CO for the engine shall be the test emission factors.

(2) Engine (Lbs/Hour) =
$$\frac{[\text{Engine (Lbs/Month)}]}{[\text{Engine Operating Hours/Month}]}$$

(3) Engine (Tons/Month) =
$$\frac{[\text{Engine (Lbs/Month)}]}{2000}$$

(4) Engine (Tons/12-Months) =
Σ of Engine (Tons/Month)

(5) Total Engine (Tons/12-Months) =
Σ of all Engine (Tons/12-Months)

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: Engines

Permit No. : 103-0029-X002

- (f) The date, starting time and duration of each deviation from the requirements specified in this permit along with the cause and corrective actions taken.
 - (g) Copies of the following additional information:
 - (1) All notifications and supporting documentation submitted under 40 CFR 60 Subpart JJJJ [§60.4245(a)(1)], including the initial notification required by §60.4245(c).
 - (2) Records of maintenance on each engine [§60.4245(a)(2)].
 - (h) The frequency, methodology, and content of the required records may be altered upon receipt of Department approval.
26. CDM Max, LLC, shall submit quarterly monitoring reports on a calendar basis.
- (a) These reports shall be submitted within 30 days following the end of the calendar quarter.
 - (b) These reports shall summarize the information in provisos 25(a) through (f) of this permit.
 - (c) Reported emissions shall cover a 12-month period.
 - (d) The frequency and/or content of the report may be altered upon receipt of Departmental approval.

DRAFT

Date

SYNTHETIC MINOR OPERATING PERMIT

PERMITEE: CDM MAX, LLC

LOCATION: 13880 Brooklyn Road [County Rd. 42], Evergreen, Conecuh Co., AL

PERMIT NUMBER

103-0029-X003

**DESCRIPTION OF EQUIPMENT,
ARTICLE OR DEVICE**

North Beach Gas Treating & Processing Facility

Compressors in VOC service

Pumps, pressure relief devices, open-ended valves or lines,
valves, flanges or other connectors in VOC or wet gas service

One (1) - Glycol dehydrator still vent

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Code of Alabama 1975, §§22-28-1 to 22-28-23 (the "AAPCA") and the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and/or use the equipment, device or other article described above.

ISSUANCE DATE : **DRAFT**

Alabama Department of Environmental Management

DRAFT

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: NSPS KKK

Permit No. : 103-0029-X003

1. This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.
2. This permit expires and the application is cancelled if construction has not begun within 24 months of the date of issuance of the permit.
3. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.
4. The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.
5. The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.
6. Additions and revisions to the conditions of this Permit will be made, if necessary, to ensure that the Department's air pollution control rules and regulations are not violated.
7. Nothing in this permit or conditions thereto shall negate any authority granted to the Department pursuant to the Alabama Environmental Management Act or regulations issued thereunder.
8. A new permit application must be made for new sources, replacements, alterations or design changes which may result in the issuance of, or an increase in the issuance of, air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants.
9. On completion of construction of the device for which this permit is issued, notification of the fact is to be given to the Chief of the Air Division. Authorization to operate the unit must be received from the Chief of the Air Division. Failure to notify the Chief of the Air Division of construction and/or operation without authorization could result in revocation of this permit.
10. This process including all air pollution control devices and capture systems for which this permit is issued shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.
11. In case of shutdown of air pollution control equipment for scheduled maintenance for a period greater than **24 hours**, the intent to shut down shall be reported to the Air Division at least 24 hours prior to the planned shutdown, **unless accompanied by the immediate shutdown of the emission source.**

CDM MAX, LLC — North Beach Gas Treating & Processing Facility: NSPS KKK

Permit No. : 103-0029-X003

12. In the event there is a breakdown of equipment in such a manner as to cause increased emission of air contaminants for a period greater than 24 hours, the person responsible for such equipment shall notify the Department within an additional 24 hours and provide a statement giving all pertinent facts, including the duration of the breakdown. The Department shall be notified when the breakdown has been corrected.
13. All deviations from requirements within this permit shall be reported to the Department within 48 hours of the deviation or by the next work day while providing a statement with regards to the date, time, duration, cause and corrective actions taken to bring the sources back into compliance. A review and evaluation of this report shall be utilized in Departmental determination of whether or not a violation of a permit requirement or requirements occurred.
14. This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.
15. Records will be maintained of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the process equipment and any malfunction of the air pollution control equipment. These records will be kept in a permanent form suitable for inspection and will be retained for at least two years following the date of each occurrence.
16. Submittal of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require stack emission testing at any time.
17. Except as provided for in section §60.630(d) of 40 CFR Part 60, Subpart KKK and section §60.482-1(d) of 40 CFR Part 60, Subpart VV, each affected facility (as defined in provisions 17(a) through (c) of this permit) that is located within an onshore natural gas processing facility in which construction, reconstruction or modification commenced after January 20, 1984 shall comply with the requirements specified in 40 CFR Part 60, Subpart KKK as is summarized in the provisions 17(a) through 17(e) of this permit.
 - (a) Affected facility is defined as:
 - (1) Each compressor
 - (2) Each group of equipment (as defined in provision 17(a)(2)(i) through (vi) of this permit) that is located within a process unit.
 - (i) Each valve

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- (ii) Each pump
- (iii) Each pressure relief device
- (iv) Each sampling connection system
- (v) Each open-ended valve or line
- (vi) Each flange or other connector

And

- (3) That is in VOC or wet gas service (as defined in section §60.481 of 40 CFR Part 60, Subpart VV and section §60.631 of 40 CFR Part 60, Subpart KKK).
- (b) Except as provided for in section §60.484 of 40 CFR Part 60, Subpart VV, each affected facility shall comply with the requirements specified in provisions 12(b)(1) through (9) of this permit.
- (1) Except as provided for in section §60.633(f) of 40 CFR Part 60, Subpart KKK, each compressor shall meet the requirements specified in sections §60.482-3, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.
 - (2) Except as provided for in section §60.633(d) and (e) of 40 CFR Part 60, Subpart KKK, each valve shall meet the requirements specified in sections §60.482-7, §60.482-8, and §60.482-9 of 40 CFR Part 60, Subpart VV and either section §60.483-1 or §60.483-2 of 40 CFR Part 60, Subpart VV.
 - (3) Except as provided for in section §60.633(d) and (e) of 40 CFR Part 60, Subpart KKK, each pump shall meet the requirements specified in sections §60.482-2, §60.482-8, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.
 - (4) Except as provided for in section §60.633(b), (d) and (e) of 40 CFR Part 60, Subpart KKK, each pressure relief device shall meet the requirements specified in sections §60.482-4, §60.482-8, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.
 - (5) Except as provided for in section §60.633(c) of 40 CFR Part 60, Subpart KKK, each sampling connection system shall meet the requirements specified in sections §60.482-5, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.

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- (6) Each open-ended valves and lines shall meet the requirements specified in sections §60.482-6 and §60.482-9 of 40 CFR Part 60, Subpart VV.
 - (7) Each flange or other connector shall meet the requirements specified in sections §60.482-8 and §60.482-9 of 40 CFR Part 60, Subpart VV.
 - (8) Provided a closed vent system and control device is utilized to meet any of the above requirements, each closed vent system and control device shall meet the requirements specified in sections §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.
 - (9) Provided a flare is utilized to meet any of the above requirements, the flare shall comply with the requirements specified in §60.18 of 40 CFR Part 60, Subpart A.
 - (c) Except as provided for in section §60.633 (c), (d), (e) and (f) of 40 CFR Part 60, Subpart KKK, compliance with the standards specified in provision 12(b) of the permit shall be demonstrated through the utilization of the tests methods and procedures specified in section §60.485 of 40 CFR Part 60, Subpart VV.
 - (d) The inspection and monitoring requirements specified in sections §60.482-1 through §60.482-10 of 40 CFR Part 60, Subpart VV and either section §60.483-1 or §60.483-2 of 40 CFR Part 60, Subpart VV shall be complied with.
 - (e) Except as provided for in section §60.633, §60.635 and §60.636 of 40 CFR Part 60, Subpart KKK, the recordkeeping and reporting requirements specified in section §60.7 and §60.19 of 40 CFR Part 60, Subpart A, sections §60.486 and §60.487 of 40 CFR Part 60, Subpart VV shall be maintained and submitted to the Department.
 - (f) Provided the requirements specified in proviso 17(b)(1) through (9) of this permit were not complied with, a deviation from the requirements specified in proviso 17(b)(1) through (9) of this permit shall be deemed to have occurred.
18. Fugitive equipment VOC emissions shall be estimated while utilizing the method and procedures specified in either proviso 18(a) or 18(b) or 18(c) or 18(d) of this permit.
- (a) While utilizing the methods and procedures specified in Section 2.3.1 (Average Emission Factor Approach) of Chapter 2 in EPA's "Protocol for Equipment Leak Emission Estimates EPA-453/R-95-017, Nov 1995" document.
 - (b) While utilizing the methods and procedures specified in Section 2.3.2 (Screening Ranges Approach) of Chapter 2 in EPA's "Protocol for Equipment Leak Emission Estimates EPA-453/R-95-017, Nov 1995" document.

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- (c) While utilizing the methods and procedures specified in Section 2.3.3 (Correlation Approach) of Chapter 2 in EPA's "Protocol for Equipment Leak Emission Estimates EPA-453/R-95-017, Nov 1995" document.
- (d) While utilizing the methods and procedures specified in Section 2.3.4 (Unit Specific Correlation Approach) of Chapter 2 in EPA's "Protocol for Equipment Leak Emission Estimates EPA-453/R-95-017, Nov 1995" document.
- (e) Total Plant Fugitive VOC (Tons/Month) =
$$\sum \text{of all Equipment Type Categories for all process units} / 2000 \text{ Lbs/Ton}$$
- (f) The monthly plant fugitive VOC emissions may be calculated for the initial month and that value may be utilized for successive months.
- (g) Records for the information specified in proviso 18(a) through (f) shall be maintained and made available for inspection.

19. The requirements specified in proviso 19(a) through (e) shall be complied with.

- (a) Within three (3) months of this issuance of this permit and every three months thereafter, the inlet gas stream to the glycol dehydrator shall be analyzed for its C₁ to C₆, normal hexane, benzene, toluene, ethyl benzene and total xylene and BTU content.
- (b) A monthly record shall be maintained of the glycol dehydrator process parameter readings that are required as input data for the GRI-GLYCalc computer simulation model.
- (c) Glycol dehydrator/reboiler vent emissions shall be calculated quarterly using one of the following methods:
 - (1) Utilizing the latest content analysis that is required by proviso 19(a) of this permit and the average values of the data recorded in accordance to the requirements specified in proviso 19(b) of this permit in conjunction with the GRI-GLYCalc computer simulation model.

$$\text{Glycol VOC (Tons/Quarter)} = \frac{[\text{Glycol VOC (Lbs/Quarter)}]}{[1 \text{ Ton}/2000 \text{ Lbs.}]}$$

$$\text{Glycol HAP (Tons/Quarter)} = \frac{[\text{Glycol HAP (Lbs/Quarter)}]}{[1 \text{ Ton}/2000 \text{ Lbs.}]}$$

- (2) Calculating a worst-case scenario at least annually, and applying these results to each quarter.
- (d) Records for the information specified in proviso 19(a) through (c) shall be maintained and made available for inspection.

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- (e) The frequency of this record and/or calculation may be modified upon receipt of Department approval.
20. At no time shall the total emissions from the sources at this facility exceed 100 Ton/yr of NO_x, CO, VOC, or SO₂. Compliance with this provision will be demonstrated by maintaining emission calculations as detailed in all current permits.
21. CDM Max, LLC, shall submit quarterly monitoring reports on a calendar basis.
- (a) These reports shall be submitted within 30 days following the end of the calendar quarter.
 - (b) These reports shall summarize the information in provisos 18(e) and 19(c) of this permit.
 - (c) Reported emissions shall cover a 12-month period.
 - (d) The frequency and/or content of the report may be altered upon receipt of Departmental approval.

DRAFT

Date